IN THE CLAIMS

Please amend the claims as follows.

1. (Currently Amended) A method for cultivating human or animal cells, one culture each of cells of at least one specific type being established in a defined environment and the cell cultures being supplied with assigned, liquid nutrient media, growth factors, and gases, the method comprising ~~which comprises the steps of~~:

[[a)]] establishing at least one cell culture inside at least one cell culture chamber ~~(20)~~ of a cell culture system ~~(30)~~;

[[b)]] starting a flow of freely selectable, defined, liquid media in the at least one cell culture chamber ~~(20)~~ in order to ensure a continuous supply for the at least one cell culture;

[[c)]] starting a flow of different gases with freely selectable concentrations into the at least one cell culture chamber ~~(20)~~ in order to ensure a constant, continuous gassing of the at least one cell culture;

[[d)]] heating the at least one cell culture chamber ~~(20)~~ in a regulated or controlled manner so as to ensure a constant temperature there over the duration of an experiment;

~~e) permanently~~ continuously microscopically observing the at least one cell culture inside the at least one cell culture chamber ~~(20)~~, without samples of the cell culture being taken over the duration of an experiment, wherein continuous microscopic observation is performed using a camera ~~with~~ including a microscope attachment, the camera being disposed on a displaceable table for movement of the camera with respect to the cell culture chamber;

~~moves past~~ moving the camera with respect to the cell culture chambers ~~(12)~~ while programming ~~on software~~ movement positions of the camera; and

~~f) permanently~~ continuously measuring cell culture parameters selected from the group consisting of pH values, lactate values and electric potential relevant to treating inflammation, cancer, cardiovascular disease, AIDS, relevant to programmed cell death, or relevant to blood coagulation, ~~by means of suitable~~ using sensors integrated in the at least one cell culture chamber ~~(20)~~.

2. (Currently Amended) The method according to claim 1, ~~characterized in that~~ wherein a given number of cell cultures is established inside accordingly assigned cell culture chambers ~~(20)~~, these cell culture chambers being connected in series.

3. (Currently Amended) The method according to claim 1, ~~characterized in that~~ wherein a given number of cell cultures is established inside accordingly assigned cell culture chambers ~~(20)~~, these cell culture chambers being connected in parallel.

4. (Currently Amended) The method according to claim 1, ~~characterized in that the~~ wherein at least one of a type of liquid media, ~~and/or~~ the flow directions thereof, ~~and/or~~ the distribution thereof, or ~~and/or~~ the flow volumes ~~can be~~ are varied over the duration of an experiment.

5. (Currently Amended) The method according to claim 1, ~~characterized in that in the case of~~ wherein, when cell culture chambers are connected in series, the liquid media are continuously passed on from cell culture chamber to cell culture chamber.

6. (Currently Amended) The method according to claim 1, ~~characterized in that the~~ wherein a type of gases, ~~and/or~~ the flow directions thereof, ~~and/or~~ the distribution thereof, or ~~and/or~~ the gassing concentrations are varied over the duration of an experiment.

7. (Currently Amended) The method according to claim 2, ~~characterized in that in the case of~~ wherein, when cell culture chambers ~~(20)~~ are connected in series the gases are continuously passed on from cell culture chamber to cell culture chamber.

8. (Currently Amended) The method according to claim 1, ~~characterized in that~~ wherein the temperature prevailing in the at least one cell culture within the at least one cell culture chamber ~~(20)~~ is measured ~~permanently~~ continuously and input as an actual temperature value into a corresponding temperature adjusting circuit ~~and/or~~ or control circuit ~~thus enabling~~ to enable a corresponding adjustment ~~and/or~~ or control of the heating of the cell culture chamber.

9. (Currently Amended) The method according to claim 1, ~~characterized by the fact that~~ wherein one cell culture of a different type each is established on both sides of a gas-permeable membrane within at least one cell culture chamber ~~(20)~~ for ~~the purpose of~~ a direct co-cultivation of both cell cultures.

10. (Currently Amended) The method according to claim 9, ~~characterized by~~ comprising starting a first flow of media to one side of the membrane, namely, the apical side with the first cell culture, and [[of]] starting a second flow of media that differs from the first flow of media to the other side of the membrane, namely, the basolateral side, with the second cell culture.

11. (Currently Amended) The method according to claim 1, ~~characterized by application of a method for indirect co-cultivation,~~ comprising connecting different biological systems ~~being connected~~ in series in corresponding cell culture chambers ~~(20)~~.

12. (Currently Amended) The method according to claim 1, ~~characterized by~~ comprising a video-supported microscopic observation of the at least one cell culture in the at least one cell culture chamber ~~(20)~~.

13. (Currently Amended) The method ~~Method~~ according to claim 1, comprising transmitting to a computer-controlled monitoring and control system ~~characterized in that all~~ data ~~that are~~ obtained by ~~permanent~~ at least one of the continuous microscopic observation of the at least one cell culture within the at least one cell culture chamber, the continuous ~~(20) and/or permanent~~ measuring of the relevant cell culture parameters, or the continuous ~~defined in step (f) and/or permanent~~ measuring of the temperature in the at least one cell culture inside the at least one cell culture chamber ~~(20)~~, wherein the ~~are transmitted to a~~ computer-controlled monitoring and control system ~~(G) for further processing there~~ is used to process the data.

14. (Currently Amended) The method according to claim 13, ~~characterized in that the permanent~~ wherein the continuous measuring of the relevant cell culture parameters ~~is carried~~

~~out by means of a~~ includes software-aided measuring of the relevant cell culture parameters ~~method~~.

15. (Currently Amended) The method according to claim 1, ~~wherein in step (e) during the permanent microscopic observation the at least one cell culture inside the at least one cell culture chamber (20), wherein the camera with a microscopic attachment on a displaceable table moves past the cell culture chamber (12) while programming on computer software, movement positions of the camera, further comprising the steps of~~ wherein the continuous microscopic observation includes:

determining cell contours during movement of the camera[[,]];

storing the determined cell contours on the computer software[[,]]; and

recognizing those stored determined cell contours when the camera again moves past the cell culture chamber later on during the observation.

16. (Canceled)